

REMARKS

The Office Action of October 15, 2003 was received and carefully reviewed. Accordingly, the Applicants present amendments to include in claim 1 the limitations of claims 6-8, and cancel claims 3-8. Additionally, the Applicants note that the upper limit of the processing time of the post-plastic working heat treatment is changed from 10 hours to 5 hours and the lower limit of the processing time of the pre-plastic working heat treatment is changed from 10 hours to 16 hours. Support for the changes can be found at least at page 4, lines 26-27, page 25, lines 8-9, page 19, lines 12-13, page 23, line 16 and page 28, line 20 of the specification. Claims 1, 2 and 9-11 remain pending.

For the reasons advanced in detail below, reconsideration and withdrawal of the currently pending rejections is requested.

With regard to the Examiner's objection to the specification as failing to provide an accurate brief description of the drawings as required by Rule 37 C.F.R. 1.74 and MPEP Chapter 608.01(f), the Applicants note that the MPEP Chapter 608.01(f) specifically states:

If a figure contains several parts, for example, figure 1A, 1B, and 1C, the figure may be described as figure 1. If only figure 1A is described in the brief description, the examiner should object to the brief description, and require applicant to either add a brief description of figure 1B and 1C or describe the figure as "figure 1." (Emphasis added)

Therefore, in order to comply with this requirement, the Brief Description of the Drawings has been amended to identify the partial view Figures 3A-B, 6A-D, 7A-D, 10A-B and 13A-D, as Figures 3, 6, 7, 10 and 13 as outlined by the MPEP. The Applicants further note that there is no requirement in Rule 1.74 or the MPEP that each sub-figure, i.e., FIG. 3B, be set forth in the "Brief Description of the Drawings". However, each of the partial view Figures 3A-B, 6A-D, 7A-D, 10A-B and 13A-D are discussed in the "Detailed Description of the Invention", beginning on page 19 and continuing to page 29 of the specification. Finally, it is also noted that each of the partial view drawing Figures 3A-B, 6A-D, 7A-D, 10A-B and 13A-D properly identify each partial view using the "FIG" identifier followed by a capital letter, as required by Rule 37 C.F.R. 1.84(u)(1) and MPEP Chapter 608.02. In view of the amendments to

the "Brief Description of the Drawings" and for the above reasons, the Examiner's objection to the specification is believed to have been properly addressed and the objection should now be withdrawn.

With regard to the Examiner's rejection of claim 3, under 35 U.S.C. 112 (second paragraph), the cancellation of claim 3 has rendered this rejection moot.

With regard to the Examiner's provisional rejection of claims 1-11, under the judicially established doctrine of obviousness-type double patenting, as being obvious in view of the claims 1-10 of U.S. Patent Application No. 10/353,050, it is requested that the rejection be held in abeyance pending allowance of claims.

Turning to the Examiner's rejections of:

Claims 1-3, 8-3, under 35 U.S.C. 102(b), as being anticipated by the teachings of JP 06-248402,

Claims 1-3 and 8, under 35 U.S.C. 102(b), as being anticipated by the teachings of Fujita et al. ('424),

Claims 1-5, 8-11, under 35 U.S.C. 102(b), as being anticipated by the teachings of Jeffries et al. ('630), and

Claims 6 and 7, under 35 U.S.C. 103(a), as being obvious in view of the teachings of Jeffries et al. ('630) combined with the teachings of Otsuka et al. (EP '321).

the Applicants respectfully traverse each of these rejections.

Initially, it is noted that the post-plastic working heat treatment of the invention requires a higher temperature and shorter processing time than the conventional aging precipitation hardening treatment of the T6 heat treatment. These conditions enable ductility of the light metal plastic worked article to be effectively improved, while maintaining the strength and yield strength of the plastic worked article (Effect 1).

Further, the pre-plastic working heat treatment of the present invention requires longer processing time than that of a solution treatment of the conventional T6 treatment. As a result, blisters can be effectively produced in the surface of the article that is to undergo plastic working, and, in the same manner as the solution treatment performed in the T6 treatment, the homogeneity of the plastic worked article can also be improved. As blisters are created in the pre-plastic working heat treatment and are subsequently eradicated by the plastic working, the further creation of blisters by the

post-plastic working heat treatment can be suppressed in spite of the high temperature of the post-plastic working heat treatment (Effect 2).

With regard to the JP 06-248402 document, the 'JP '402 document discloses a similar process, for the pre- and post-plastic working heat treatments, see paragraphs [0021]-[0026]:

solution treatment process → plastic working → aging precipitation
→ hardening treatment process,

to the present invention. In JP 06-248402, however, the solution treatment process is conducted at 400-450 °C for 10 or more hours; while, the aging precipitation hardening treatment corresponding to the post-plastic working heat treatment requires a temperature of 165-210 °C and a processing time of 16 hours (175 °C for 16 hours in Examples), which is lower in temperature but longer in processing time as compared to the present invention. Thus, the invention disclosed in JP 06-248402 does not enable the strength and the elongation after fracture to be effectively improved, as illustrated in Figs. 4, 5 and 9 for the claimed invention. Further, the JP 06-248402 does not suggest carrying out the pre- and post-plastic heat treatment steps for the amount of time specified, i.e., the first pre-plastic working heat treatment is longer than the post-plastic working heat treatment.

Finally, JP 06-248402 fails to disclose (or suggest) the claimed formation of blisters on the surface of the article as a result of the pre-plastic working heat treatment and the formation of internal defects included in the article to undergo plastic working and that said defects take up no more than 10% of a volume of the article to undergo plastic working. For these reasons, the rejection of claims 1-3 and 8-11, under § 102(b), is inappropriate and must be withdrawn.

Fujita et al. disclose the conventional step of performing a T6 heat treatment after plastic working, but fails to disclose or suggest the combination of pre- and post-plastic working heat treatments steps and any specific conditions thereof, as recited in the presently claimed invention. In Fujita et al, the aging precipitation hardening treatment corresponding to the post-plastic working heat treatment requires a

temperature of 175 °C and a processing time of 16 hours, which is lower in temperature but longer in processing time as compared to the present invention. Thus, like JP 06-248402, the invention of Fujita et al does not enable, via the claimed pre- and post-plastic working heat treatment steps, the strength and the elongation after fracture to be effectively improved.

Finally, Fujita et al. fail to disclose (or suggest) that claimed formation of blisters on the surface of the article as a result of the pre-plastic working heat treatment and the formation of internal defects included in the article to undergo plastic working and that said defects take up no more than 10% of a volume of the article to undergo plastic working. For these reasons, the rejection of claims 1-3 and 8, under § 102(b), is inappropriate and must be withdrawn.

With regard to the Jeffries et al document, the patentees fail to disclose or suggest any post-plastic working heat treatments and any specific conditions thereof, and disclose the pre-plastic working heat treatment should be carried out for 70 hours and states that shorter treatment times, e.g. 48 hours, improves the properties but not to the extent of the longer pre-plastic working heat treatment. Since Jeffries et al does not teach the claimed combination of pre- and post plastic working heat treatment, nor the formation of blisters and internal defects, the rejection of claims 1-5 and 8-11, under § 102(b), is inappropriate and must also be withdrawn.

Turning to the Otsuka et al. reference, cited by the Examiner to assert the inherency of forming blisters in pre-heat treatment of Jeffries et al. of magnesium alloys containing aluminum, the reference fails to disclose or suggest pre- and post-plastic working heat treatments steps and any specific conditions thereof, as recited in the presently claimed invention, and accordingly, does not remedy the defects of Jeffries et al noted above. That is, Otsuka et al. teach a process for producing cast aluminum alloys - to be used as brazing material for joining with other aluminum materials – using a gate cast speed of 20 m/s or more to avoid blistering. Therefore, the combination of teachings of Jeffries et al. and Otsuka et al. does not teach or suggest each of the specifically claimed features. Consequently, the rejection of claims 6 and

7, under § 103(a), as being obvious in view of the teachings of Jeffries et al. combined Otsuka et al. is inappropriate and must also be withdrawn.

In summary, as can be appreciated from the above elaboration, none of the references anticipates Effects 1 and 2 of the present invention that can be achieved by the above-mentioned processing conditions of the pre- and post-plastic working heat treatments as elaborated upon in the specification at pages 19-29. Therefore, for the above reasons, the Applicants urge that the rejections of claims 1-11, under § 102(b) and § 103(a), based upon the teachings of the JP 06-248402, Fujita et al., Jeffries et al. and Otsuka et al, do not establish anticipation or a *prima facie* case of obviousness based upon the criteria outlined in MPEP Chapters 2131 and 2143, and respectfully request withdrawal of the § 102(b) and § 103(a) rejections of record.

Accordingly, Applicants respectfully contend that the claimed invention defines subject matter that is clearly patentably distinct over the prior art of record. If the Examiner believes further discussions with Applicants' representative would be beneficial in this case, he is invited to contact the undersigned.

Respectfully submitted,

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